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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/781,300 | 02/18/2004 | Sung Tac Lee | U 015031-8 | 4812 |

7590 04/16/2007
Ladas & Parry
26 West 61st Street
New York, NY 10023

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| EXAMINER |
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BERTHEAUD, PETER JOHN

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| ART UNIT | PAPER NUMBER |
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3746

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS | 04/16/2007 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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|------------------------------|---------------------------------------|--------------------------------------|--|
| Office Action Summary | Application No. 10/781,300 | Applicant(s) LEE, SUNG TAE | |
| | Examiner Peter J. Bertheaud | Art Unit 3746 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to the amendments of 2/9/2007. It is noted that claims 1 and 3 have been amended and claim 8 has been added. In making the below rejections and/or objections the examiner has considered and addressed each of the applicant's arguments.

Claim Objections

2. Claim 1 is objected to because of the following informalities: On line 10, "incliend" should be changed to --inclined--. On line 12, the phrase "on the bottom surface the bearing seat" should be changed to --on the bottom surface of the bearing seat--. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim 6,948,418 in view of Iversen 6,702,067 and in further view of Oda 6,152,640.

Kim discloses a hermetic reciprocating compressor comprising: a hollow frame 310; a rotating shaft 230 placed in a hollowed part of the frame so as to rotate relative to the frame; an eccentric part 240 provided on the rotating shaft so as to eccentrically

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rotate; a piston 340 to rectilinearly move, in response to an eccentric rotation of the eccentric part; a cylinder 321 provided on an upper end of the hollow frame so as to allow the piston to compress a fluid in the cylinder; a bearing seat 312 extending from the upper end of the hollow part of the frame and including a bottom surface; a thrust bearing 410 having a race 411, that could be a lower race, seated on the bottom surface of the bearing seat so as to support the eccentric part; an oil path 231 provided in the rotating shaft so as to guide oil upward. However, Kim fails to disclose the following claimed limitations taught by Iversen and Oda.

Iversen teaches a piston compressor assembly including a crankshaft 2, a bearing seat 12, and an oil path 15 for directing oil upward. Iversen further discloses an oil discharge hole 16 to communicate with the oil path 15, thus discharging the oil to an outer surface of the rotating shaft; and an oil slot 36 provided in the bottom surface of the bearing seat, such that the oil discharged from the oil discharge hole flows through the oil slot to lift a lower wheel of the thrust bearing. Iversen teaches that this would be advantageous because it improves lubrication.

Therefore, it would have been obvious to one skilled in the art at the time of invention to modify the reciprocating compressor of Kim by including an oil discharge hole to communicate with the oil path and an oil slot provided in the bearing seat, as taught by Iversen, in order to improve lubrication (see col. 2, lines 2-15).

Oda teaches a ball joint assembly comprising a bearing seat 6, a thrust bearing 4, and a bottom surface 8 of said bearing seat 6. Oda further teaches that the bottom

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surface 8 of the bearing seat 6 has an inclined surface 9 which is inclined upward from the bottom surface 8.

Therefore, it would have been obvious to one skilled in the art at the time of invention to modify the reciprocating compressor of Kim by implementing an inclined surface in order to create a buffer clearance between the thrust bearing and the bearing seat (Oda, col. 6, lines 9-11).

In addition, while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function, because apparatus claims cover what a device is, not what a device does (Hewlett-Packard Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990)). Thus, if a prior art structure is capable of performing the intended use as recited in the preamble, or elsewhere in a claim, then it meets the claim.

Furthermore, due to the fact that the purpose of the inclined surface is nothing more than to provide a guide for the oil to support a thrust bearing, it would have been an obvious matter of design choice to make a portion of the bottom surface of the bearing seat inclined, since such a modification would have involved a mere change in the shape of a component. Kim, for example, discloses a depression 313 in between the bottom surface of the bearing seat and a bearing. This depression would provide the same function as the claimed bearing seat and because Applicant has not disclosed that the inclined surface provides an advantage, is used for a particular purpose, or solves a stated problem; thus, a change in shape is generally recognized as being

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within the level of ordinary skill in the art. *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) (see MPEP 2144.04 – IV, B. Changes in Shape).

5. Claims 2, 3, 5, 6, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim 6,948,418 in view of Iversen 6,702,067 and in further view of Oda 6,152,640 and still in further view of Joo 6,419,049.

Kim in view of Iversen and in further view of Oda disclose the invention as discussed above. Kim also discloses a depression 313 extending on a bottom surface of the bearing seat in a radial direction. Oda also discloses that the inclined surface 9 is around the bottom surface 8 of the bearing seat with a diameter increasing in an outward direction from an inside edge to an outside edge of the inclined surface 9. Therefore, Kim in view of Iversen and in further view of Oda discloses the invention as claimed except for the following limitations taught by Joo.

Joo teaches a main shaft bearing lubricating apparatus for a seal-type reciprocating compressor including a bearing seat 1, a rotary shaft 6, an oil slots 3, and a thrust washer 8. Joo further teaches that an oil slot 3 extends on the bearing seat in a radial direction. Joo also teaches that the oil slot comprises a plurality of oil slots 3 which are formed on the bearing seat while being spaced apart from each other at predetermined angular intervals (see Fig. 1). Joo also discloses that the oil slot is shaped in a helical manner, with a width of the oil slot reducing in a direction from an oil inlet to an oil outlet of the oil slot (see Fig. 1 and see col. 3, lines 19-21). Joo teaches that these aspects of the invention would be advantageous because they provide sufficient lubricating oil.

Therefore, it would have been obvious to one skilled in the art at the time of invention to modify the reciprocating compressor of Kim in view of Iversen and in further view of Oda by including many oil slots to carry oil in a radial direction, as taught by Joo, in order to provide sufficient lubrication (see col. 2, lines 1-10).

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim 6,948,418 in view of Iversen 6,702,067, Oda 6,152,640, and Joo 6,419,049, and in further view of Phillips 4,717,263 and Kimura 4,772,128.

Kim in view of Iversen, Oda, and Joo disclose the invention as discussed above. However, Kim in view of Iversen, Oda, and Joo do not show the oil slot extending to the inclined surface of the bearing seat and to an edge of the hollowed part of the frame, thus having extension slot parts with predetermined lengths.

Phillips discloses a gas bearing including a bearing seat (see Fig. 9) with an inclined surface and exhaust slots 132. Phillips further discloses that the oil slots extend to the inclined surface of the bearing seat and to an edge of the hollowed part of the frame (see Fig. 9). Phillips teaches that this would be advantageous because the slots create divisions in the bearing seat, or bearing pockets, that contribute to optimal incoming and outgoing fluid flow characteristics.

Therefore, it would have been obvious to one skilled in the art at the time of invention to modify the reciprocating compressor of Kim in view of Iversen, Oda, and Joo by extending the slots in the bearing seat from the edge of the hollowed frame to the inclined surface, as taught by Phillips, in order to create optimal incoming and outgoing fluid flow (see col. 2, lines 19-22).

Kim in view of Iversen, Oda, Joo, and Phillips teaches the invention as claimed except for the bearing seat having extension slot parts with predetermined lengths.

Kimura teaches a scroll compressor with oil grooves in a thrust bearing including a hollowed out middle portion and oil slots 32j. Kimura further teaches that the oil slots extend from the hollowed part of the frame to an outer portion of the bearing where an extension slot part 32k is formed by shallowing the depth of the slot (see Figs. 4a and 4b). Kimura teaches that this would be advantageous because it increases the resistance in the flow path.

Therefore, it would have been obvious to one skilled in the art at the time of invention to modify the reciprocating compressor of Kim in view of Iversen, Oda, Joo, and Phillips by creating an extension slot part, as taught by Kimura, in order to uniformly lubricate the bearing surface (see col. 8, lines 41-51).

Response to Arguments

7. Applicant's arguments filed 2/9/2007 have been fully considered but they are not persuasive. The arguments are addressed in the rejection as set forth to claim 1, 3, and 8 above.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

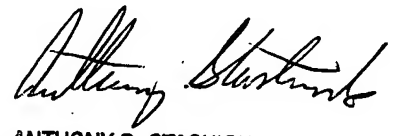
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J. Bertheaud whose telephone number is (571) 272-3476. The examiner can normally be reached on M-F 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Stashick can be reached on (571) 272-4561. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


PJB
4/10/07


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